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# The Classical Weekly

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VOL. XIX, No. 1

MONDAY, OCTOBER 5, 1925

WHOLE No. 504

## Five Striking Conclusions from the Classical Investigation

Numbers refer to page and line of the General Report.

- A. The Latin work is poor. 29, 18; 48, 2; 90, 27; 186, 6.
- B. The teachers are blamed. 23, 6; 122, 26; 169, 24; 248, 4.
- C. The methods are blamed. 172, 5; 175, 4; 189, 1.
- D. The books are not blamed. (And yet the books fix in large part the methods of both teachers and pupils).
- E. The thing most needed is to read **Latin as Latin** and this power has not been developed. 83, note; 96, 5; 125, 19.

## SYNTACTIC PRINTING

complies with the spirit of the Classical Investigation because it furnishes the only means known at present for developing the power to read

**Latin as Latin.** 189, 23.

Language, like any other composite thing, can be successfully studied only by mastering its parts and their relations. 221, 22; 289, 1. Expertness in any field is a matter of conscious practice with fundamental principles until the use of them becomes unconscious and so instinctive. 295, 32; 298, 21. The reason for the wide-spread failure to read Latin as Latin is that very few pupils grasp grammatical principles well enough to make instinctive use of them in the comprehension of sentence-meaning. 71, 28; 94, 9; 139, 2. For this failure to grasp grammatical principles the ordinary books and their methods are responsible. They fail to give the student the much needed help and practice in the principles of syntax.

## SYNTACTIC PRINTING

means

**better teaching, better learning, better work**

because it makes a reasonable mastery of grammatical structure attainable and thus meets and overcomes the student's greatest obstacle. 93, 2. It is the only means of providing the great desideratum, to wit, Latin that is at the same time both easy and classical. Syntactic printing leaves unchanged the essential character and the intrinsic excellence of the Latin language and yet it presents that language to the student freed from its greatest difficulty. The only two books that enable the student to read his Caesar in the third semester with both profit and pleasure are

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It is manifestly better to keep the pupil in contact with the best Latin by bringing that within his easy reach than to attempt fruitlessly to endow "easy" and "made" Latin with the educational values of the classical language. 127, 16; 192, 18.

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# The Classical Weekly

VOL. XIX, No. 1

MONDAY, OCTOBER 5, 1925

WHOLE No. 504

## AQUEDUCTS, ANCIENT AND MODERN LOS ANGELES, ROME, NEW YORK CITY

Every one who is interested in the aqueduct system of ancient Rome itself, and in the evidences all over the Roman world of the pains and the extraordinary engineering skill with which the Romans supplied their cities with water must have had his attention arrested in November and December last by accounts published in the newspapers of the trouble in Owens Valley, Southern California, concerning the great aqueduct upon which the city of Los Angeles mainly relies for its supply of water. One such account appeared in *The Literary Digest* for December 6, 1924. From its extracts are here given:

Newspapers in the East . . . are pointing out that the need for water is basic and primitive, that many a Western rancher has died fighting for a water-hole, that the history of the settlement of our West is largely a history of fights for the control of water.

This latest fight began twenty years ago when Los Angeles started to build the longest aqueduct in the world, costing \$25,000,000, beginning up in the Sierra Nevadas 3,817 feet above sea-level and running 250 miles down to the suburbs of Los Angeles near the sea. In some places, as one editorial reminds us, this great aqueduct, with a capacity of 259,000,000 gallons a day, is an open, unlined canal; in other places it is a covered concrete conduit; and elsewhere a steel pipe. The water is driven through tunnels in some mountains, and is siphoned over others. From the very beginning of the aqueduct's history, we read in the news columns of the *Los Angeles Times*, the controversy has been going on. "To the valley residents, the aqueduct reached a long arm from Los Angeles and took from them the farmer's life blood, without which their prosperity will be seriously set back; to the Los Angeles representatives the building of the aqueduct was a necessity, and an engineering feat to make possible the future growth of Los Angeles". Litigation developed over compensation for land and water rights, and settlement proposals offered by the city authorities were rejected by certain Owens Valley organizations. The situation was still in this unsettled state last May when a section of the aqueduct was damaged with dynamite and a little later a Los Angeles attorney was kidnapped and ordered to leave the valley. Then, on November 16, a raiding party of Owens Valley ranchmen seized the aqueduct at a point a few miles north of Owens Lake, opened the waste gates and turned the water into the Owens River at an estimated loss of \$15,000 a day. A Baptist minister took his turn guarding for twenty-four hours; "most of my congregation is here", he said. City, County and State authorities were defied. Finally, on the twentieth the raiders went home after Los Angeles bankers had agreed to use their best efforts to bring about a fair settlement. . . .

In the East, the *New York World* is mindful of the fact that "every growing city encounters these difficulties":

"Brooklyn before consolidation was prevented from extending its mains by an alliance of Suffolk County and up-State legislators and had to deal with long law-

suits over ground-stored water claims. New York later had to cross the Hudson and go to great expense in the Ashokan undertaking because of hostility north of Croton Lake. Boston succeeded in solving the problem by joining nearby towns in a Metropolitan Water District for joint supply.

But these troubles may help to show why water engineers look fifty years ahead. And as great populations increase, so will their difficulties. City people may yet be moving back to the waterways—to power and potable supply at the source".

I suspect that ancient Rome had difficulties of this sort with the folk whose waters the city diverted to its own use. I well remember the wild hubbub in the country newspapers, reflected in the papers of New York City, when New York City was taking possession of farm-lands and village-lands in and about Carmel, a small town five miles north of Lake Mahopac, and about sixty miles north of the Grand Central Terminal. This exercise by the metropolis of the right of eminent domain was connected with the extension of the Croton Aqueduct, the beginnings of the aqueduct system of the City. Farm-houses and other farm-buildings, village residences, stores, etc., over a large area were removed or destroyed, great dams were built, and vast areas were flooded by the impounded waters. Those who were obliged to move were, of course, loud in their complaints. Especially bitter were the complaints that arose from the fact that the City insisted that there should be no buildings of any sort for a distance of three hundred feet from the shores of lakes or reservoirs that were parts of the water-system, and from the banks of rivers that fed those lakes and reservoirs. It was difficult to make people understand that it was necessary not only to get water for the City, but to keep it free from contamination, especially of the sort that breeds typhoid fever. In time, adequate financial compensation was made to the dispossessed owners, indeed more than adequate from the point of view of the real value of the property taken, though never, I suppose, adequate from the point of view with which grants from a City or a State or a Federal treasury are viewed by the recipients. Many were able to buy in for a song, at auction, their former buildings, and to move them to their new places of residence. But one source of trouble existed here, as so many years later at Los Angeles, in the dilatoriness of the City in making payments to dispossessed owners. After the reservoirs had been completed, New York City built fine roads through and around its reservations, roads immensely superior to any that had existed in that territory.

Los Angeles may have the longest aqueduct the world has ever known, but New York City has, I venture to think, the most stupendous water-supply



system the world has ever known. There is little water on Manhattan Island, where the older and the main parts of the City lie; there is little water, too, on Long Island, where Brooklyn, now incorporated in Greater New York, lies. Staten Island, too, part of the City, has little water. Hence before 1850 the City had gone forty miles to the north, to Croton Lake, for its water.

About the beginning of the present century, the first steps were taken toward the building of the Ashokan Reservoir. This Reservoir begins some fourteen miles west of Roundout-Kingston, a town on the west side of the Hudson River about 90 miles north of the New York City line. I quote from a pamphlet issued by the City of New York, entitled *New York's Catskill Mountain Water Supply, A General Description* (dated October, 1923. Pp. 43. Illustrated):

The Catskill water-supply system is the largest which has ever been undertaken. It ranks among the most notable enterprises ever carried out by any city, state or nation. For magnitude and cost and for the variety, complexity and difficulty of the physical problems involved, it stands with the great canals, with the trans-continental railway lines and with New York's own rapid transit railway system. It extends from the northerly slopes of the Catskill mountains to Staten Island in New York harbor, a distance of 159 miles. The total disbursements for all purposes to October 1, 1923, have been \$166,993,165.92, and the contract work under way aggregates in value \$30,000,000.

That portion of this water-supply system which has been completed constitutes more than three-quarters of the whole and includes the Ashokan reservoir, an artificial lake 12 miles long, in which are stored the waters of the Esopus creek; also the Catskill aqueduct, extending 92 miles from the Ashokan reservoir to the northern boundary of the City; the Kensico storage reservoir near White Plains, the Hill View equalizing reservoir in the City of Yonkers, and the Silver Lake terminal reservoir on Staten Island. There have also been completed, within the City limits, 35 miles of tunnel and pipe-lines which serve to deliver the water into the pipes through which it finally reaches the consumer.

In order wholly to complete the system, there remains the development of the Schoharie watershed by the construction of the Gilboa dam, which will form the Schoharie reservoir. From this reservoir the water will be diverted through the 18.1-mile Skandaken tunnel . . . to the Ashokan reservoir . . .<sup>1</sup>

Catskill water has its origin in the Esopus and Schoharie watersheds. The flow from the springs and rivulets which rise in the high and wild forest lands of the Catskills is impounded in the great Ashokan storage reservoir. The Esopus watershed, draining naturally into the Hudson river, has an area of 257 square miles. The Schoharie watershed, draining to the north into the Mohawk river, has an area of 314 square miles. The combined drainage area of these two sources is therefore 571 square miles, and it is conservatively estimated that, even during a series of extraordinarily dry years, more than 500 million gallons of water daily can be drawn. The bed-rocks being entirely sandstones and shales, the water is of an unusual degree of softness. The sparsely-settled nature of the country also contributes toward the sanitary quality of the water.

The Catskill aqueduct, leading from the Ashokan reservoir to the City, will have a capacity of not less than 500 millions of gallons per day. . . .

In order that the quality of the water delivered should be of the very best, aeration basins, which consist of a large number of small fountains, have been constructed at both the Ashokan and the Kensico reservoirs. The purpose of these fountains is to throw the water into the air and convert it into a fine spray so that the disagreeable tastes and odors which, at some seasons of the year, may occur will be eliminated. For insuring the sanitary quality of the water chlorinating plants were installed at the Ashokan and Kensico reservoirs and all of the water at those points is sterilized and rendered entirely pure.

The water from the Ashokan-Schoharie Reservoir is brought down the west side of the Hudson River to Storm King Mountain. There it drops down a shaft, and is carried under the Hudson River through a tunnel cut in "granitic rock". This tunnel is 1,114 feet below sea-level. The point at which the water reaches the surface, on the east bank of the Hudson River, is some miles north of Peekskill, and about 45 miles from New York City Hall. Thence it runs to the Kensico Reservoir. Concerning this the following statement appears in the pamphlet from which a quotation was given above:

The Kensico reservoir, in Westchester county, 30 miles from the City Hall, was designed to contain sufficient Catskill water for maintaining the supply over a period of several months. It serves as an emergency reservoir, so that the flow to the City will not be interrupted while the 75 miles of aqueduct between it and the Ashokan reservoir are at any time out of service. This reservoir is formed by the Kensico dam, across the valley of the Bronx river, about three miles north of White Plains and 15 miles north of the Hill View reservoir. Its capacity is 29 billions of gallons and its surface elevation is at 355 feet above mean tide at New York. The area of its water surface is 2,218 acres and the marginal protective strip around its entire circumference is in few places less than 500 feet wide.

The Kensico dam is one of the great masonry structures of the world. It contains altogether nearly one million cubic yards of masonry—about one-third that which the Egyptians placed in the Great Pyramid. However, of the large amount of masonry in this dam only about one-third is visible above the surface of the ground. At the point of the greatest height it rises 307 feet above the rock foundation on which it rests. A new highway system, rendered necessary by the construction of the Kensico reservoir, embraced the construction of 15 miles of road on which were a number of bridges, one of them a reinforced-concrete structure of five arches each about 127 feet long. This bridge carries the highway over an arm of the reservoir and the roadway at the center is 107 feet above the reservoir bottom.

Catskill water enters the Kensico reservoir near its upper end and is drawn from the lower end through a system of gates located in chambers about one mile north from the Kensico dam. At this point provision is made for controlling the rate at which the water is drawn, for screening and for sterilizing it with liquid chlorine. Here also has been provided a large aeration basin in which the water is thrown into the air through 1,599 nozzles. This operation results in thoroughly mixing the water with air and thus aiding its purification.

The water, after reaching the limits of New York City, is carried under the Harlem River to Manhattan Island, and from Manhattan Island under the East River to Brooklyn, and under The Narrows to Staten Island.

<sup>1</sup>For the Gilboa Dam see the Magazine Section of the New York Times, Sunday, September, 21, 1925.

The Department of Water Supply, Gas and Electricity of New York City issues two pamphlets, available to the public: (a) *The Municipal Water Supply System of The City of New York, A General Description* (dated April, 1923. Pp. 45, plus nine unnumbered pages, giving twelve Tables); (b) *New York's Catskill Mountain Water Supply, A General Description* (dated October, 1923. Pp. 43). Both pamphlets are illustrated.

Special attention is called to the Schoharie Extension of the Ashokan Reservoir, which is now rapidly nearing completion. By this, waters which naturally flow north, to reach the Mohawk River, are to be diverted, to flow southward, and ultimately to reach New York City in its various parts, Manhattan Island, Long Island, Staten Island. It will be remembered that the Mohawk River, into which the waters that are to be impounded in the Schoharie Creek Extension of the Ashokan Reservoir would naturally flow, joins the Hudson River, from the West, about nine miles north of Albany. The New York Central Railway runs through the Mohawk valley on its way from Albany to Schenectady and Utica.

For many years the name of Verplanck Colvin was connected with the Adirondack Mountains, in New York State, some distance north of Albany. From 1865 to 1900 he was constantly surveying the Adirondack Mountains and the Adirondack Forests, writing about them, speaking about them, and, from 1873-1900, as an official of New York State, making reports about them to the Governor and the Legislature. In his *Topographical Survey of the Adirondack Wilderness, 1873-1874*, page 288, he made a most interesting suggestion concerning the securing of the supply of water that New York City would ultimately need. I owe my knowledge of the suggestion to a passage in a book by Alfred L. Donaldson, *A History of the Adirondacks* (New York, The Century Company, 1921. Two volumes. Pp. xii + 383; iv + 383. Richly illustrated. I commend these two delightful volumes to all interested in the Adirondack region).

Of Mr. Colvin's suggestion Mr. Donaldson writes as follows (2.165):

He also urged the wisdom of beginning to build an aqueduct from the Adirondacks to New York, foreseeing that the city would some day be compelled to turn to these mountains for its water-supply. This farsighted prophecy was of course laughed at and ignored fifty years ago, but the day of its fulfilment is drawing ever nearer. If the population of the metropolis continues to increase at its present rate, it is easily demonstrable that within twenty years the utmost capacity of the present water-supply will be inadequate to meet the increased consumption. When this happens, the Adirondacks must inevitably be tapped.

After the foregoing had been written, I chanced upon a very interesting editorial in *The New York Sun*, of January 27, 1925, entitled *Water for Three States*. It ran as follows:

The treaty between the States of New York, New Jersey and Pennsylvania, providing for the control and disposition of the waters of the Delaware River, has been signed by the commission of eight representing the three States. If it is ratified by the Legislatures of New

York, Pennsylvania and New Jersey, and by Congress, it will guarantee a joint use of a great volume of water that has heretofore been an undeveloped asset.

The usefulness of the Delaware will be twofold: The river will deliver water for drinking and will permit great hydroelectric developments.

So far as New York is concerned, the question of water supply is the more vital. The Merchants Association in February, 1923, called the attention of Governor Smith to the possible need of a new supply for this city as early as 1926, and suggested that the Delaware offered a solution. That year the commission that has just finished the treaty was appointed to draft a policy of joint developments by the three States through which the river ran. Action by New York alone was impossible although the source of the Delaware lies in New York. The withdrawal of water in the territories of this State could only be made by a joint agreement with the other two States having equal rights in the use of the river.

The way will now be open, if the treaty is ratified, for an additional water supply of 1,000,000,000 gallons a day for New York. This would be equal to the delivery from the city's existing system. The Delaware rises in the western Catskills about fifty miles northwest of the Ashokan Reservoir, at an altitude of more than 1,800 feet. It thus combines the advantages of isolation with a sufficient altitude for a gravity system. New Jersey and Pennsylvania will have a right to similar supplies. In the case of certain New Jersey towns, like Trenton, the present supply is unsatisfactory, because it is drawn from the river near the city. New Jersey will now be able to get a purer supply by piping from near the source over New York territory.

The use of the water for municipal systems will not be permitted to interfere with navigation. In fact, the commissioners say that by conserving the flood waters the States can make the summer level of the river even higher than it is today. The power possibilities of the stream are great. There is a 900 foot drop in the river's altitude from the source to the Pennsylvania border, and a further drop of almost 500 feet from there to Port Jervis. Power development on a large scale will be inevitable once the treaty is ratified.

If the Legislature finds that New York's interests are fully protected it should be prompt to make the eighteen months of work of the commission permanently effective. Water supply and "white coal" are both vital in the development of any modern community, and the States whose representatives have agreed upon a policy with regard to the Delaware comprise a territory that is more populous and more active in industry, business and commerce than any other area of similar size in this hemisphere.

CHARLES KNAPP

## WARFARE, ANCIENT AND MODERN<sup>1</sup>

War is war. Its outward forms change, just as the outward forms of peace change. From the stylus to the typewriter is just as far as from the club to the machine-gun—a weapon also known, affectionately or otherwise, as a 'typewriter'. The development of tactics is neither more nor less remarkable than the development of office methods.

Strip the story of any military operation of external identifying details, and one will find it hard to put a place and a date to the story.

Once upon a time there was a small kingdom, with a

<sup>1</sup>This paper was read at the Sixth Annual Fall Meeting of The Classical Association of the Atlantic States, held at the George Washington University, Washington, D. C., November 29, 1924.

powerful empire for a neighbor. The small kingdom was not without warlike traditions, and in fact its capital was in territory conquered within the last few centuries. But it was not at the time a military power, nor was its policy aggressive. The empire was, on the contrary, both military and aggressive.

The military systems of the two powers were not greatly dissimilar. Both were strongly centralized governments, and the sovereign was the field commander. The smaller state at the time of the conquest had had a simple military system, somewhat imperfectly developed, but based upon the militia idea and universal service. Its tactics were based upon light armament and free maneuver. But during the more quiet period its organization and its tactics had been affected by those of its neighbors; they had become conventionalized, and approached very closely those of the enemy. Their characteristics were heavy armament and strong defensive positions, with frequent raids and demonstrations by the stronger party to tempt the weaker into the open. Fire power was imperfectly understood, and distinctly subordinated to shock; and the two were not well combined.

The imperial army finally invaded the weaker state in force, and the lines soon became stabilized. The imperial forces began their raids and demonstrations, one general especially being very active in this work. The king refused to be drawn into a general engagement, and so avoided defeat; but his troops soon acquired a feeling of inferiority, and their morale suffered.

At this critical moment, a young man came forward with a suggestion for a new method of meeting the enemy's attacks, consisting in a return to earlier national maneuver methods, and a more perfect coordination of fire and shock. It involved combat in the open, and hence the assumption of a considerable risk; but the king had become convinced of the necessity of doing something positive, and approved the plan. Apparently this decision was against the advice of the conservatives on the staff, for propositions were made for a modification of the plans, so as to depart less from the conventional mass and shock tactics. Even the king was impressed by the arguments advanced, for he urged acceptance of some of the modifications. But he wisely did not insist, standing by his approval and refusing to force the adoption of half measures.

Troops were trained in the new tactics, and the position was reorganized accordingly. The changes appealed to the national spirit of the troops, and their morale improved.

Then one day the particularly dreaded general led a strong force forward, and advanced across No Man's Land with his troops in dense masses, trusting in the known weakness of the defense in fire power. Everything went as usual until they had come to close range; then, without warning, a vigorous and well directed fire was opened from the trenches. The losses were heavy; the general himself was wounded, and the attack was checked but not repulsed.

At the same moment, before the enemy could recover himself and reorganize, a counter-attack was

launched. The royal troops, although light-armed and inferior to the imperialists in pure shock action, struck them at the critical moment, when the heavier masses were out of hand and immobilized. The result was a complete success for the defense. More than this, the advantage was swiftly and skillfully utilized to penetrate the main position, and the invader was forced to abandon his whole campaign.

This battle was fought about 1000 B. C. The king was named Saul; the imperial general was Goliath, and the young innovator in tactics was David.

The earliest weapons were undoubtedly the stone and the club—fire and shock. Every development in tactics comes from organization, improvement, and combination of these elements.

The great exponent of fire tactics in the ancient world was Persia. One usually connects her with the chariot and its charge, but this was not characteristic. Cavalry was the principal arm, and fire was the principal mode of action. The heavy infantry formed the center of the line; having come to bowshot, it halted, planted its heavy wicker shields, and opened fire from behind them. The slingers and light infantry acted as skirmishers, retiring behind the line when they were 'squeezed out', and possibly using overhead fire—although the opportunity for this must have been scant, for the heavy troops themselves were formed with considerable depth. The infantry made no effort to close; the fire was in the nature of a holding attack. The decisive charge was delivered by the cavalry on the wings.

This plan has its merits, especially against an enemy not well armed and disciplined, or against a commander unfamiliar with it or lacking resource and quick decision. But against first class heavy infantry its deficiencies are obvious. It assumes that the fire will actually immobilize the enemy, and that the cavalry charge can be driven home. But the bow is not a long range weapon, and the Persian tactics were such that preparation to use it was clearly observable. A determined charge in close order, if timed correctly, stood a good chance of breaking through the lines of shields. And the typical Persian cavalry charge was not boot to boot with the lance; this was impossible to any ancient cavalry, since the stirrup had not been invented. It was 'as foragers', with the bow and the javelin, although each man did carry a second javelin to use in the *mélée*. Light infantry or obstacles on the flanks might break its cohesion.

The ineffectiveness of fire alone is often illustrated in more modern times. A conspicuous instance is the battle of Long Island. Here the American riflemen, fine marksmen as they were, could not withstand the determined advance of the Hessians. Their pieces were slow loading, unstandardized, and without bayonets; when they had fired a round or two, they were rushed off their feet by the solid lines of battle, and cut to pieces in a way that excited the pity even of the enemy.

Greece was the exponent of pure shock. The chariot disappeared early. The typical Greek warrior of the



classical period was the 'hoplite', or armored pikeman. As auxiliary arms, there were cavalry and light infantry, including archers, slingers, and 'peltasts', or javelin men protected chiefly by the small shield which gave them their name.

The universal formation was the phalanx, a heavy line of hoplites. Its details varied according to the tactical situation, depth being required to give weight to its shock, extension to outflank and to avoid outflanking. Eight ranks was a very common depth, and may perhaps be called a normal formation, but instances are found of much deeper formations. It is usually thought of as a solid mass, but such mass would have been unmanageable; it was an assembly of files, side by side. The file leaders maneuvered, the rest of the men had only to follow in trace.

The fire power of the phalanx was zero. Its auxiliaries remedied this defect only in part, for, if they were used in front as skirmishers, they had to be drawn off to the flanks some time before contact, and, their weapons being of short range, overhead fire could not be very effective. Its charge, however, was almost irresistible, its defense almost unbreakable. In either case its weakness was the flank, for its maneuvering ability was small, and it was difficult to change front or to refuse a flank. Here was where it most needed its auxiliary arms.

This was essentially the formation used down to the disappearance of the pike. Its conspicuous modern representatives were the Swiss and German regiments, and the Spanish tercios. This same helplessness when unable to close appears strikingly at the battle of Ravenna, in 1512. Here the Spanish infantry was protected by entrenchments, and the Swiss mercenaries of Gaston de Foix could not reach them. Both sides resorted to a standing fire fight with their low power artillery. The Spanish lay down, and secured fair shelter, but the Swiss could not, for they were momentarily threatened by a charge of heavy cavalry only two hundred yards away, and could not relax. The patience of the cavalry under artillery fire gave way before that of the Swiss; they charged and were repulsed, and Foix got his chance to attack in his turn with both Swiss and French infantry.

The Persian and Greek systems, so fundamentally different, first met fairly at Marathon, in 490 B. C. The first hostilities had been in a revolt of the Ionian colonies against Persia, about 500 B. C. This was put down, but the Great King seems to have recognized the justice of some of the complaints, for he reorganized his provinces on the Asia Minor coast, reforming the tribute system and allowing the Greek cities to replace their tyrants by democratic institutions.

The European provinces—the Thracian Chersonese (Gallipoli), Thrace, Macedonia—had shown signs of unrest during this revolt. Besides this, continental Greece had assisted the rebels, and Darius doubtless meditated punishment or at least intimidation. A great expedition under Mardonius, by land and water, while suffering some reverses, still somewhat restored Persian prestige along the northern coast. One incident of this expedition, unnoticed at the time but of

importance later, was the expulsion of the tyrants who were disaffected to Persia. One of these was Miltiades, of the Thracian Chersonese or Gallipoli Peninsula, who had acquired an intimate acquaintance with Persian methods when he had commanded his local contingent in the great Scythian expedition of 512 B. C., an acquaintance he was to use against the Persians later.

The logical next step was to punish those Greek states, notably Athens, which had helped the rebels. The Thracian expedition had shown so clearly the difficulties to be encountered by a combined land and sea force following the coast, that this expedition was made an overseas expedition pure and simple, crossing the Aegean by easy stages, from island to island, and establishing a base at Eretria in Euboea, in sight of the Attic coast and almost of Athens herself. With this expedition was Hippias, the recently deposed tyrant of Athens.

The strength of the expedition has been much exaggerated in popular legend. Herodotus gives the number of ships, exclusive of horse transports, as 600. He was probably guessing, but may be supposed to have guessed high enough. This gives about 60,000 fighting men as the probable maximum, and 40,000 as a conservative estimate. Contrary to Persian practice in Asia, and probably by reason of the difficulties of sea transport, the cavalry seems to have been weak.

Athens prepared in great haste for defense, and sought assistance from Sparta. This was granted, but, before it could arrive, news was received of a Persian landing at Marathon, twenty-five miles by road from Athens<sup>2</sup>.

The landing-place was doubtless selected on the advice of Hippias. It is a plain four or five miles long and about two miles wide, with hills behind and a marsh at each end. The beach is clear and the anchorage sheltered. The plain is cut across the middle by a small stream. The main road to Athens here follows the coast; there is another, somewhat difficult, through the hills, and several links connect the two at this point. The intention was clearly to draw the Athenians northward, contain them with a part of the force, then move by sea around to the city and take it by the aid of the factions opposed to the new government just established there. The plan worked in part. The Athenians were drawn, but it was the Persians that were contained.

Acting with great promptness and decision, the Athenians moved with what few allies they could get, and established themselves just back of Marathon, holding the hill roads and threatening the flank of any force moving upon Athens by the coast. Herodotus gives their force as ten thousand; modern criticism, while unable to fix a definite figure, finds this a not unreasonable estimate.

<sup>2</sup>For the battle of Marathon my authorities were Herodotus 5. 28, 6. 40-115, especially 102-115; Hans Delbrück, *Geschichte der Kriegskunst* 1. 35-49 (Berlin, 1900); G. B. Grundy, *The Great Persian War and Its Preliminaries*, 149-203 (London, 1901). [To Colonel Spaulding's references one may add the notes in the edition of Herodotus by W. W. How and J. Wells (2 volumes, Oxford, Clarendon Press, 1912), and especially the very elaborate discussion in R. W. Macan's edition of Herodotus, 2. 149-248 (London, 1895)—C. K.].

The commander was Callimachus, the polemarch—that one of the nine archons or magistrates who was charged with military affairs. Among the ten 'generals', or leaders of the ten district contingents, was Miltiades. Probably by virtue of his intimate knowledge of the Persians, as well as by his strength of character, he dominated the council of war and dictated the plan of action.

The delicate point in the Persian plan had been reached. They had drawn out the Athenians; it remained now to take the city. Time was working with them, in that the absence of the Athenian troops gave an opportunity for treachery at home, but it was also working against them, for they must have known that the Spartans would soon be there. So, after waiting as long as they dared—three days—they offered battle, but with a detachment only, to hold the enemy while the rest moved by sea. This force was chiefly infantry, and was little if any superior to the Greeks, certainly not as much as two to one.

The Athenian position was well chosen—in the mouth of a little valley running out into the plain, where the flanks of the phalanx, essentially weak, could both be rested upon the hills, and these in turn defended by light troops. The position was too long for the force, and the line had to be thinned, but only the center was weakened, the flanks being kept strong. The Persians crossed to the south bank of the stream which bisected the plain and formed facing the hills, about a mile away.

Herodotus will have it that the Athenians opened the attack. It may have been so; the movements of the Persians may have forced their hand. Certainly they would have preferred a defensive battle, for a long advance would have exposed their flanks and sacrificed the advantage of their carefully chosen position; but they could not afford to let the Persian main body embark. Herodotus's notion of a rapid charge for such a distance is palpably out of the question. Even if we could accept the theory sometimes advanced, that the phalanx used an open order and counted upon some individual fencing in the front rank, 'double time' for a mile would be a heavy demand upon the best of athletes, burdened with arms and armor and required to maintain alignment. And, as explained before, the formation was probably dense, and the demands upon individual strength even greater. The movement would have had to be slow up to the last hundred yards or so, to preserve the close phalanx formation, and the Persian light troops would have had time to worry them in flank. Unquestionably the proper tactics for the Persians was to hold back, as long as the enemy made no move, since all they wanted was to hold the Athenians away from Athens. But without accepting in its entirety Delbrück's account of the battle, one is inclined to agree with him that the Persians did yield to the temptation to attack.

As we know, they depended upon the combination of their archers in front and their cavalry on the flanks. But here their cavalry was weak and the enemy's flanks protected, at least so long as they stood fast.

As soon, then, as the Persian fire began to be effective, but before it had caused serious loss, the Athenians charged. Either they increased the pace of their long advance, according to Herodotus's theory, or they made a counter-attack from their original position, according to Delbrück's. In either case, the distance to be covered at the increased gait would be short—a hundred yards, or at most two hundred.

The weak Athenian center was broken, but the strong wings converged upon the Persians and routed them. So, if the war plans of Germany in 1914 showed us the influence of Cannae coming down even to our day<sup>3</sup>, Marathon shows us its forerunner—but Marathon has had no Count Schlieffen to analyze it from the point of view of the German General Staff (see below, note 4).

Thus happily freed from its awkward position, in which it had been facing two equally urgent and utterly irreconcilable tasks, the Athenian force pursued the enemy to his ships, then made all haste to avail itself of its interior lines to Athens, and reached there before the Persian fleet. The Persian expedition had failed.

Formidable as the Greek was on the battlefield, he was not much of a field soldier. His forces never kept the field long; the men wanted to go home. His marches were short, his minor tactics weak, and his supply service rudimentary. Even the great Sicilian expedition of 415 B. C., the most ambitious overseas operation Greece ever undertook, collapsed largely on account of these defects. But as the mercenary system grew, so also grew the knowledge of field service.

After the fall of the Athenian empire, a Spartan empire grew up on its ruins, and for a few years there was a Spartan peace, kept by Spartan methods. During this brief period the numberless professional officers and soldiers created by the Peloponnesian wars sought employment elsewhere—in Egypt, Asia Minor, Persia, wherever mercenaries were wanted. They thus gained greater and more varied military experience, perfected their organization, and began to make a serious study of war.

Xenophon is the highest type of these soldiers of fortune, a man of broad and liberal education, distinguished alike as a field commander and as a military student and writer. His account of the experiences of the Greek mercenaries who served under the younger Cyrus is a soldierly report of the greatest overland campaign ever made by Greeks before the time of Alexander.

The share of the Greeks in the battle of Cunaxa, the decisive battle of the expedition, shows us nothing new in their tactics, but it does show us that they had developed considerable skill in maneuver, and possessed a high degree of discipline and perfection of drill. After the battle, the five leaders of the 'free companies' among them organized themselves into the characteristic Greek council of command, under the presidency of the Spartan Clearchus. Xenophon's pen picture of this 'condottiere' is most interesting.

<sup>3</sup>See O. L. Spaulding, Jr., *The Classical Element in the German War Plan of 1914*, *THE CLASSICAL WEEKLY* 18.142-144; Bruno Meinecke, *A Modern Cannae*, *THE CLASSICAL WEEKLY* 18.157-159.



Fifty years old at this time, Clearchus had spent his life in war, serving Sparta as long as he could, then turning to Cyrus for employment. He preferred war to peace, and spent his money upon it as others upon pleasures. Bold and selfreliant, he always sought independent command, and was hard to handle as a subordinate. Loving danger, he led his troops in attack, night or day; he was prudent, and fertile in expedients; possessed in high degree the art of command; watched carefully over supply; tolerated not the slightest sign of insubordination, and punished severely, often so severely that he repented afterward, but on the principle that an undisciplined man is no man. With it all, he was recognized as just. Soldiers avoided his command in peace, but sought it in active service.

Under the leadership of this man negotiations were opened for safeconduct of the Greeks back home. The five leaders were treacherously taken and assassinated. Xenophon had heretofore been a free lance, without specific assignment, but serving apparently as an aide to Proxenus, one of the five. He now came to the front with judicious suggestions, was chosen as successor to his former chief, and by common consent was accorded the leadership that Clearchus had held.

The Ten Thousand were apparently at the mercy of the King; but he realized that their destruction was a serious undertaking, and preferred to leave it to the inhabitants of the wild regions through which they would have to pass. The conduct of their march—122 marching days and over 1,700 miles to Cotyora on the Black Sea, eight months on the road—is told modestly and in matter-of-fact language, but the story reads like a romance. To lighten the column, they burned all wagons and all tents, cut all communications, and lived on the country. The route chosen was up the Tigris and into the country of the Carduchi, or Kurds, who harassed the column by incessant skirmishing after it had shaken off the Persians.

A curious modern reminiscence of this fighting is found in our own history. European tactics of the eighteenth century were rigid; like the phalanx, the heavy infantry line of battle was better suited to pitched battle in the open than to minor tactical operations. The need for light infantry was felt, especially in the American colonial wars, and experiments were made in its organization. One such light infantry force was set up by Wolfe at Louisburg in 1758. When an acquaintance remarked one day that its maneuver reminded him of Xenophon's description of the Carduchi, Wolfe replied, "You are right; I had it thence, but our friends are astonished at what I have shown them because they have read nothing".

Under this daily pressure the marching formations of the Greeks became more flexible, and they grew expert in flank and rear guard tactics. The roads were unknown, and guides had to be secured by capture and held by intimidation. Maintenance of discipline and cohesion in the force itself required the most skillful mingling of diplomacy and decision, for all authority rested upon the consent of the governed. Crossing Armenia, they reached the divide between the head-

waters of the Euphrates and the Black Sea; and here it was that Xenophon, marching with the rear guard, heard shouting and confusion from the front, increasing so greatly that he feared something serious had happened. But, hastening forward, he found that the shouts were cries of rejoicing—"The sea, the sea!"

Even on the march along the coast the Greeks often had to fight their way. In an engagement at Calpe, near the Bosphorus, they had to deal not only with the local inhabitants but with troops sent by the Persian satrap. In this battle Xenophon used a true reserve, an almost unprecedented thing for Greece, posting three parties of two hundred hoplites each in rear of his flanks and center.

In the mountains of Colchis, just above Trebizond, Xenophon devised an even more striking innovation in the tactics of heavy infantry. The natives held the crest of a ridge; the phalanx in its close formation could not cross the broken ground to reach them. He therefore formed a line of companies—eighty of them, each of about a hundred men—each in column, and at intervals so as to extend both his flanks beyond those of the enemy. Each company was ordered to advance by the most practicable route, disregarding exact interval and keeping only approximate line. A battalion of light infantry, 600 strong, covered each flank, and another battalion moved in front of the center to act as skirmishers. This formation would not have worked against a Greek army in open country, but fitted perfectly the conditions for which it was devised. It might have been taken directly out of one of our modern drill regulations.

Here we have the elements which the later Greek generals developed—pure shock, with an effort to improve internal organization so as to permit freedom of maneuver by minor units. Epaminondas based his system upon strengthening one wing at the expense of the other, and enveloping the hostile flank with his strong wing while holding the other back—the same idea so fully worked out by Frederick the Great. Alexander, grafting his Macedonian cavalry tactics upon the Theban infantry phalanx, worked by combination of the arms and by increasing the independence of the subordinate units. But, although Alexander and his successors seem to have felt the need of better combination of fire and shock, little progress was made in that direction, even by Philopoemen, the 'last of the Greeks', who first used the checkerboard formation of small infantry units, and made his light catapults actually maneuver on the battlefield as field artillery.

Great changes were becoming inevitable—the coordination of fire and shock; the development of an organization permitting maneuver by subordinate units; the continuous control of the course of battle, which this would make possible to a general; his consequent withdrawal from the front line to headquarters; the organization of these headquarters, with tactical and administrative staffs, relieving the general of details. Greece never took these steps; it remained for a

newcomer, developing a new military system under new conditions, to show the way.

The Roman legion, as its name implies, was simply the 'gathering' of the clans to meet emergency. As was usual in all countries, it originally used a phalanx formation, and was of secondary importance to the cavalry. As in Homeric Greece, single combat of the opposing leaders often decided the battle. The old Latin word for commander was *praetor*, 'he who marches at the head'.

Legend attributes the first comprehensive reform of the original system to Servius Tullius. By 300 B. C. we find an organization in which we can clearly recognize the elements of the perfected classic legion. There was a differentiation into three age classes—the young *hastati*, the fully trained *principes*, the veteran reserve, *triarii*. As under Servius, and as under the Empire, the legion had thirty companies, now called 'maniples', probably from the wisp of straw used as a guidon. The old name 'century' was still sometimes used for a half-maniple, and the two officers of the maniple still bore the title 'centurion', but the strength was much less than the name suggests. The battle order was no longer a phalanx; each age class formed a separate line of maniples disposed checkerwise. The armament of the first two lines was the javelin and the sword; javelin fire covered a sword charge as rifle fire now opens the way for the bayonet. The maniples of the third line, the reserve, were little pike phalanxes.

Development of this idea was continuous; the names associated with the most conspicuous reorganizations are those of Scipio Africanus and Marius. Such an army evidently lent itself readily to maneuver, both on and off the battlefield, and Roman generals learned to avail themselves of this characteristic.

An early exponent of the war of maneuver was Claudius Nero, consul in 207 B. C. At that time Hannibal, the terror of Rome for ten years, still controlled Southern Italy. His brother Hasdrubal was marching from Spain to join him. Nero faced Hannibal, and his colleague Livius had moved to intercept Hasdrubal, who was strong enough to cause considerable anxiety as to Livius's ability to hold him.

Hasdrubal reached Placentia on the Po, and from there sent messengers to Hannibal, to arrange a junction of forces in Umbria. These messengers made their way in safety the whole length of Italy; but Hannibal had been engaged in active operations, frequently changing position, so that they missed his camp and fell into the hands of the Romans. Nero promptly sent the dispatches to Rome, recommending that the city garrison be sent to support Livius, and saying that he himself was starting with a detachment to join him.

This bold decision, going entirely outside of his orders, caused great anxiety in the Senate, but Nero had already started. His march was conducted with extraordinary secrecy and celerity. He sent forward officers with mounted escorts to arrange for quarters and subsistence, and to collect wagons at suitable points to carry such men as could not keep up. Taking 6,000 infantry and 1,000 cavalry, all picked men and

carrying nothing but their arms, he gave them to understand that he was undertaking a surprise attack upon a neighboring town. Getting away at night, without causing special excitement in the camp, he joined Livius near Ancona and slipped unobserved into his camp under cover of darkness.

In the morning the consuls moved out to offer battle. Hasdrubal at once noticed the increased force, and also observed the companies of travel-stained men, with rusty arms and thin horses, evidently just off the road from a long march. He was at a loss to understand how these reinforcements had arrived, and decided that his brother must have met a serious defeat—for he could not conceive that Hannibal had been outwitted by a Roman. He therefore retired that night, meaning to get behind the Metaurus River; but, missing the proper fords, he moved up the right bank looking for others. Finding none, for the banks grew higher and higher, he was brought to bay in the morning.

Hasdrubal placed his Spanish regular troops on his right, in a deep narrow formation, occupying the whole width of a piece of open ground, flanked by hill country. His left, Gallic allies, extended into the hills. His right held its own against Livius, and even ventured a counter-attack. The Gauls, by irregular fighting in the hills, held Nero also, but would not come out against him. It seemed a deadlock, with the advantage, if any, on Hasdrubal's side. But Nero again showed originality and maneuvering ability. Taking the troops of his extreme right, he drew them back, marched across Livius's rear and struck the right flank of Hasdrubal's Spaniards, already heavily engaged in front. The line was promptly rolled up, and the army completely wrecked. Hasdrubal himself was killed.

In considering this astonishing march and battle one is led to wonder if it was in Jackson's mind when he made his famous move from the Valley of Virginia to the Chickahominy to aid Lee against McClellan. The two operations resemble each other almost from point to point. But striking as is the modern instance, it must be admitted that it does not equal its prototype.

His energy not even yet exhausted, Nero started back the same night, and reached his camp, 250 miles away, in six days. He had been gone sixteen days, had marched for thirteen of them at the rate of nearly forty miles a day, and his three days' stop on the Metaurus had been constant maneuvering and fighting. His second in command, who remained behind, had also showed skill in concealing his absence, for Hannibal's first news of the expedition was when Hasdrubal's head was thrown over his ramparts, and prisoners were exhibited in chains. Giving up all hope of further victories, Hannibal withdrew into Bruttium, seeking only to maintain a foothold in Italy.

Passing over Scipio's reforms, we may come at once to the Marian legion—the same legion that extended Rome's boundaries to the English Channel and to the Euphrates. Its thirty maniples were now grouped into ten cohorts, all alike and interchangeable, designated by number. In each cohort, the three maniples

were called by the old names *triarii* (or *pilani*), *principes*, *hastati*, but there was no difference in class or in equipment. The formation was in any desired number of lines; but three, then as now, seemed best to answer the average tactical requirement, and a checkerboard formation of four cohorts in front line, three in second and three in third may be considered typical.

The combat tactics were the logical development of those already described, and, if allowance be made for the difference in range of weapons, they closely resembled those now in use. The formation was completed beyond the range of hostile fire, and the legion then habitually advanced. Even if, exceptionally, it awaited the enemy, it was usual to dash forward just before collision, to get both the moral and the physical effect of momentum. At fifteen or twenty yards range the front ranks threw their javelins, and at once opened out, closing the intervals between cohorts and forming a continuous line of swordsmen at two paces interval. The rear ranks kept up overhead javelin fire, and filled gaps in the line. The second line cohorts supported the first, reinforcing it as required. The third line was a mobile reserve, for maneuver.

For years, in the hands of Marius himself, later in those of Caesar, Pompey, and their lieutenants, this legion developed and grew strong and selfconfident. For the most part, it had to deal with inferior enemies; but in the Civil Wars legion constantly met legion. Pharsalus may be taken as a conspicuous example of its use.

In 48 B. C., after Caesar's bold crossing of the Adriatic to seek out Pompey, there was much maneuvering and fighting about the port of Dyrrachium. Caesar came off second best, and drew back to Apollonia, forty miles south on the coast. Both leaders then moved inland—Caesar to join hands with a detachment that he had near Heraclea (Monastir), and Pompey to meet Scipio, who was marching from Syria with reinforcements. Both junctions being effected, after a narrow escape by Caesar's detachment, the armies established contact near Pharsalus in Thessaly. It was to Pompey's interest to fight, for he was in superior force, and expected no more reinforcements, while several columns were moving to join Caesar. But he wanted to fight on his own terms; so he entrenched his camp on a hill, overlooking Caesar's in the plain, and invited attack. Caesar tried by maneuver to draw him into the plain, and succeeded, Pompey's hand being forced by his supporters, who wanted to finish the war and go home to enjoy the fruits of victory. Caesar then joined battle without waiting for his reinforcements; for, while he was inferior in numbers, both in horse and foot, his troops were distinctly superior in quality.

Pompey's right and Caesar's left rested upon the river Enipeus. Pompey massed his strong cavalry on his left; Caesar's weaker cavalry faced them, strengthened by picked footmen trained to keep pace by holding to the horses' manes—a trick learned in Gaul. Pompey held back his infantry and sought to envelop Caesar's right with this mounted wing. Caesar attacked with

his first two lines, holding his third in reserve; at the last moment, noting the heavy concentration of hostile cavalry, he drew six cohorts from this third line and placed them behind his right. Pompey's cavalry, completely successful at first, was beaten back by a determined charge of these six cohorts which used their javelins as pikes, for the sword was too short to fight mounted men.

The infantry was now engaged all along the line, and fully employed with the frontal fight. The six cohorts, together with such of Caesar's cavalry as remained in hand, lapped around Pompey's left, and at the same time Caesar sent in his third line. Presumably Pompey also had his reserve, but, if so, his fighting line was broken before he could bring it to bear. His legions broke for the hills behind the camp, 'the officers still leading', as Caesar dryly remarks.

When the Roman Empire ceased to expand, and active campaigning gave way to frontier guard duty, the legion greatly changed, and finally decayed. The standard military text-books of the Middle Ages were the works by Vegetius and the other military Commentaries of the later Empire. But with the Renaissance came a renewed interest in the earlier and more glorious days of the Roman armies. Machiavelli, when he devised his system for the Florentine militia, based his work upon the classic legion. Maurice of Nassau, working to free the Netherlands from Spanish domination, turned first to the Emperor Leo and the writers of the later Empire, but became interested in Polybius and the earlier legion, and drew his inspiration from both. In the eighteenth century Marshal Saxe, striving to lighten and make more flexible the rigid battalions of the day, devised what he called a legion, modernizing the principles of Marius and Caesar. In more recent times we have not consciously imitated Rome, but we have done, with our weapons, what she did with hers, and have insisted upon the combination of fire and shock. If we describe a Roman battle scheme, omitting all reference to ranges and avoiding tell-tale phrases, we shall find, as we found with the David and Goliath story, that the description might well apply to the attack of a modern division.

In a broader sense, too, ancient warfare is still exercising its influence over us. We have only to read the articles on the battle of Cannae, written for the German military magazines by Count Schlieffen<sup>4</sup>, German Chief of Staff a few years before the recent war, to understand how that battle influenced the German war plan of 1914. The advance into France, as Count Schlieffen conceived it, would have been a Cannae on a grand strategic scale. Hindenburg's Battle of Tannenberg was a Cannae on a grand tactical scale. It is hardly too much to say that in the ten years before 1914 Hannibal had taken his place among the leaders of German military thought, and Cannae was the watch-word of the German armies that took the

<sup>4</sup>The articles by Count Schlieffen were published originally in one of the German military magazines. They may be found most readily in his *Gesammelte Schriften* (2 Volumes, Berlin, 1913), in part in Volume 1, under the caption Cannae, in part in Volume 2, under the caption Hannibal.



field that year to meet the successors of Marlborough and of Napoleon.

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### REVIEWS

Antike Mysterien. By Franz Burger (1924). Pp. 32.  
Die Griechischen Frauen. By Franz Burger (1924). Pp. 49.

Antike Technik. By Eduard Stempler (1924). Pp. 49.

Freundschaft und Knabenliebe. By Wilhelm Kroll (1924). Pp. 39.

Aischylos, Die Perser, Griechisch und Deutsch. By Georg Lange. Pp. 47.

Plutarch, Kinderzucht, Griechisch und Deutsch. By W. H. P. Seliger, revised by Fritz Zahn (1924). Pp. 25.

Lukian, Der Tod des Peregrinus, Griechisch und Deutsch. By Wilhelm Nestle (1925). Pp. 24.

There is now being published, by the Ernst Heimeran Verlag, Munich, a series of booklets entitled *Tusculum Schriften*, whose aim is to make clear certain aspects of ancient culture and civilization and to explain their influence upon modern times, not only for persons who, after they have enjoyed a classical training, have preserved a broad sympathy and interest in antiquity, but also for the general reader. To this series the first four booklets here under review belong.

In these days, in which research in the field of comparative religion has produced scholars like Cumont, Dieterich, Usener, Reitzenstein, many a reader would like to make himself generally acquainted with the different cults of antiquity and their influence upon early Christianity, without plunging into the extensive and technical literature on this subject. This is the type of booklet with which Burger presents us in his *Antike Mysterien*. He begins by explaining why the cults of Attis, Mithras, Dionysus, and Eleusinian Demeter found a welcome in the West. Having briefly referred to the attitude of early Christianity towards these cults he passes to the usages employed at mysteries, usages that were to assist a human being *συγγενέσθαι τῷ δαίμονι*. Here he follows Dieterich's classification: (1) The Food of the God (9-12); (2) The Love-communion with the God (12-18); (3) "Gotteskindschaft" (18-24); (4) Death and Regeneration (24-32). Reference is made not only to the main cults of antiquity, but also to the cults of other peoples and ages, wherever these present striking parallels. Particular stress is placed on the relations of the pagan cults to Christianity.

In his short Introduction to his booklet on Greek Women Burger announces his division of the subject into four topics (page 5): (1) The Beauty of a Greek Woman (6-19); (2) The Greek Woman in Married Life (19-33); (3) Greek Courtesans (33-44); (4) Aspasia (44-49). After discussing the conception of beauty among the Greeks (6-8), the author passes to

the means employed by women to preserve their beauty. He discusses cosmetics (9-11), the different kinds of hairdress (11-14), garments (14-15), jewels and finery (15-19). Chapter 2 deals with the social and mental status of a Greek woman. Marriage customs, adultery, divorce, etc., are briefly discussed. A reflection upon the sad fate of the Greek woman who, in order to escape mental and physical slavery, had to become a courtesan, forms the transition to the next chapter. In this, after the author has drawn the distinction between the ancient and the modern term 'courtesan', he describes the social status of the ancient courtesans and the influence they exerted upon great men and upon literature. A fine appreciation of Aspasia closes the booklet. It may be remarked that parallels from Roman life are very scarce, while modern parallels are to be found more frequently.

Stempler's booklet gives a short account of ancient mechanics. By presenting a list of inventions and inventors, the writer proves that the ancients made important mechanical contributions in various fields (5-15). He considers (1) The Water Supply in Ancient Cities (15-18); (2) Stage Artifices (19-21); (3) Fire Engines (22); (4) Clocks (22-24); (5) The Roman Road-system and Travelling Conditions (24-27); (6) Bridges (28); (7) Naval Architecture (28-32); (8) Lighthouses (32-33); (9) Artillery and War Engines (33-36). Pages 37-40 contain a short list of scholars and inventors of the Renaissance who derived their inspiration from ancient sources, and a short account of ancient observations which even modern scholarship had to accept as accurate. A short Bibliography is to be found on page 40.

Kroll's booklet is very interesting. He starts with a discussion of the nature of friendship and the rôle it played in politics, private and social life, both in Greece and in Rome. Opinions of philosophers concerning friendship are briefly referred to. A whole series of friends passes before our eyes: Catullus and Veranius, Cicero and Atticus, M. Aurelius and Fronto. Mention is made of friendship between master and slave (Cicero and Tiro) and of friendship between man and woman. This discussion (5-16) prepares the ground for the part dealing with "Knabenliebe" (16-39).

Kroll traces "Knabenliebe" to its ancient origins, and then describes not only its dissemination in Greece, but also its meaning and the part it played in politics, poetry, and philosophy. Due consideration is given to the development as well as to the deterioration of "Knabenliebe". The masterly hand of Kroll manifests itself everywhere, especially where he combines Greek and Roman elements. Modern parallels are not lacking.

In a review published in *THE CLASSICAL WEEKLY* 18.109-110, I called attention to the *Tusculum Bücher*, by the same publisher. The last three volumes under review here are the continuation of that series. These volumes, too, lack Introductions. The translations are fine and exact reproductions of the originals. Brief notes appear also in each booklet.

JACOB HAMMER